MORE PRACTICE WITH RACKET 0.2

COMPUTER SCIENCE 61AS

The Basics of Racket

1. What notation does Racket use and what are the benefits of using it?

2. What do we mean by 'functional programing'?

Words and Sentences with Racket

What will the following expressions return?

1. `(first '(hello there))`

2. `(bf '(hello there))`

3. `(define (polite sentence) (sentence 'please sentence))`
   `(polite '(go to the mall))`

Booleans, Predicates and Special Forms

1. What are booleans?

2. What are predicates?

3. Why does `new-if` not work exactly the same as `if`?

```
(define (new-if predicate if-true if-false)
   (if predicate if-true if-false))
```

4. What do the following expressions evaluate to?

   a. `(= (+ 2 2) 5)`

   b. ```
   (if 'happy
       '(i am happy)
       (/ 1 0))
   ```

   c. `(equal? 'there (bf '(hello there)))`

5. Write a procedure `num-name` that takes in single digit numbers and outputs the word equivalent. Example: `(num-name 3)` Returns: `three`

# Domain and Range

Domain and range in CS are just like domain and range from math. The domain of a procedure is the type(s) of arguments that it can accept and the range of a procedure is the type of the output.

1. What is the domain and range of `last`?

2. What is the domain and range of `+`?

3. Find and fix the bugs in the following code which finds the color of a card. Cards are represented as a sentence with their value as the first word and the suit as the second word. For example, the Jack of Hearts is '(jack hearts) and 9 of Spades is '(nine spades)

```
(define (card-color sent)
  (if (or (= (last sent) 'hearts)
          (= (last sent) 'diamonds))
      'red
      'black))
```